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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,206	12/31/2001	Peter Kenington	46309/268337 (23890)	9002
22186	7590	01/30/2006	EXAMINER	
MENDELSON AND ASSOCIATES, P.C. 1500 JOHN F. KENNEDY BLVD., SUITE 405 PHILADELPHIA, PA 19102			TORRES, JUAN A	
			ART UNIT	PAPER NUMBER
			2631	

DATE MAILED: 01/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/030,206	KENINGTON, PETER	
	<b>Examiner</b>	<b>Art Unit</b>	
	Juan A. Torres	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 51,57,62,68,73-76,78-85 and 87-90 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 51,57,62,68,73-76,78-79, 82-85 and 87-88 is/are rejected.
- 7) ☒ Claim(s) 80,81,89 and 90 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Amendment***

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

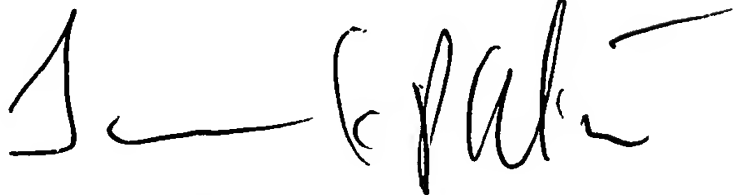
In view of the Appeal Brief filed on 12/07/2005, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

  
JAY K. PATEL  
SUPERVISORY PATENT EXAMINER

The amendments to the claims were received on 09/09/2005. These amendments are accepted by the Examiner.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 51 and 57 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 51, claim 51 is an apparatus claim, but it does not define any structure. MPEP in section 2114 states that “[A]pparatus claims cover what a device *is*, not what a device *does*.” *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original)”. And also that “While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997)”.

As per claim 57, claim 57 is rejected because it depends from claim 51.

***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 51, 57, 62 and 68 are rejected under 35 U.S.C. 102(e) as being anticipated by Jenkins (US 6104239 A).

As per claim 51, Jenkins discloses a lineariser for reducing distortion of an output signal of signal handling equipment by processing a raw signal with data selected from a store in response to the amplitude and frequency content of the raw signal (abstract; figures 1 and 4; column 1 line 62 to column 2 line 13; column 2 line 34 to column 3 line 32; and column 3 lines 43-58); where the store comprises a group of look-up tables, each table corresponding to a component of the raw signal having a different frequency or band of frequencies, and each table comprising a table of coefficients, each coefficient associated with a value of the amplitude of the component of the table (abstract; figures 1 and 4 column 3 lines 43-58).

As per claim 57, Jenkins discloses claim 51, Jenkins also discloses a divider for dividing the raw signal into a number components having different frequencies or bands of frequencies (abstract; figures 1 and 4 column 3 lines 43-58).

As per claim 62, Jenkins discloses a method for reducing distortion of an output signal of signal handling equipment the steps of selected from a store in response to the amplitude and frequency content of the raw signal, and using the data in distortion reduction processing of the raw signal (abstract; figures 1 and 4; column 1 line 62 to column 2 line 13; column 2 line 34 to column 3 line 32; and column 3 lines 43-58); where the store comprises a group of look-up tables, each table corresponding to a component of the raw signal having a different frequency or band of frequencies, and each table comprising a table of coefficients, each coefficient associated with a value of the amplitude of the component of the table (abstract; figures 1 and 4 column 3 lines 43-58).

As per claim 68, Jenkins discloses claim 62, Jenkins also discloses dividing the raw signal into a number components having different frequencies or bands of frequencies (abstract; figures 1 and 4 column 3 lines 43-58).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 73-76 and 82-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jenkins (US 6104239 A) in view of Chandran (US 6591234 B1).

As per claims 73 and 82, Jenkins discloses a method and apparatus for reducing distortion in an output signal generated by signal handling equipment comprising

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generating a modified component for each raw component based on the amplitude of the raw component retrieving, for each raw component, a value for the corresponding modified component from a look-up table (LUT) based on the amplitude of the raw component; and each different frequency or band of frequencies has its own LUT (abstract; figures 1 and 4; column 1 line 62 to column 2 line 13; column 2 line 34 to column 3 line 32; and column 3 lines 43-58). Jenkins doesn't specifically disclose dividing a raw signal into a plurality of raw components, each raw component having amplitude and each raw component corresponding to a different frequency or band of frequencies; and generating a modified component for each raw component based on the amplitude of the raw component. Chandran discloses a method and apparatus for dividing a signal into a plurality of components, each component having amplitude and each component corresponding to a different frequency or band of frequencies (figure 1 block 104; column 1 lines 29-64); and combining the plurality of modified components to generate a modified signal (figure 1 block 116; column 2 lines 1-15). Jenkins and Chandran are analogous art because they are from the similar problem solving area of reducing the distortion of a signal. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the predistortion system disclosed by Jenkins the frequency divider and combiner disclosed by Chandran. The suggestion/motivation for doing so would have been reduce distortion in single channels in multiple channel systems (Chandran abstract and column 1 lines 15-18). Therefore, it would have been obvious to incorporate Jenkins with Chandran to obtain the invention as specified in claims 73 and 82.

As per claims 74 and 83, Jenkins and Chandran disclose claims 73 and 82. Jenkins also discloses that the signal handling equipment is an amplifier adapted to amplify the modified signal (figures 1 block 18; column 1 line 62 to column 2 line 13; column 2 line 34 to column 3 line 32); and the modified signal is generated by applying pre-distortion to the raw signal, wherein the pre-distortion reduces the distortion in the output signal generated by the amplifier (abstract; figures 1 and 4; column 1 line 62 to column 2 line 13; column 2 line 34 to column 3 line 32; and column 3 lines 43-58). Jenkins and Chandran are analogous art because they are from the similar problem solving area of reducing the distortion of a signal. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the predistortion system disclosed by Jenkins the frequency divider and combiner disclosed by Chandran. The suggestion/motivation for doing so would have been reduce distortion in single channels in multiple channel systems (Chandran abstract and column 1 lines 15-18). Therefore, it would have been obvious to incorporate Jenkins with Chandran to obtain the invention as specified in claims 74 and 83.

As per claims 75 and 84, Jenkins and Chandran disclose claims 73 and 82. Chandran also discloses applying different copies of the raw signal to a plurality of band-pass filters to generate the plurality of raw components, each band-pass filter corresponding to a different frequency or band of frequencies (figure 1 block 104; column 1 lines 29-64); and summing the plurality of modified components to generate the modified signal (figure 1 block 116; column 2 lines 1-15). Jenkins and Chandran are analogous art because they are from the similar problem solving area of reducing the



distortion of a signal. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the predistortion system disclosed by Jenkins the frequency divider and combiner disclosed by Chandran. The suggestion/motivation for doing so would have been reduce distortion in single channels in multiple channel systems (Chandran abstract and column 1 lines 15-18). Therefore, it would have been obvious to incorporate Jenkins with Chandran to obtain the invention as specified in claims 75 and 84.

As per claims 76 and 85, Jenkins and Chandran disclose claims 73 and 82. Chandran also discloses transforming the raw signal from a time domain to a frequency domain to generate the plurality of raw components (figure 2 block 202 column 2 lines 35-51); and transforming the plurality of modified components from the frequency domain to the time domain to generate the modified signal (figure 2 block 204 column 2 lines 35-51). Jenkins and Chandran are analogous art because they are from the similar problem solving area of reducing the distortion of a signal. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the predistortion system disclosed by Jenkins the frequency divider and combiner disclosed by Chandran. The suggestion/motivation for doing so would have been reduce distortion in single channels in multiple channel systems (Chandran abstract and column 1 lines 15-18). Therefore, it would have been obvious to incorporate Jenkins with Chandran to obtain the invention as specified in claims 76 and 85.

Claims 78, 79, 87 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jenkins and Chandran as applied to claims 73 and 82 above, and further in view of Leyendecker (US 5867065).

As per claims 78 and 87, Jenkins and Chandran disclose claims 73 and 82. Jenkins and Chandran don't specifically disclose adaptively updating values stored in each LUT. Leyendecker discloses adaptively updating values stored in each LUT (figure 6 block 605; column 10 lines 16-39). Jenkins, Chandran and Leyendecker are analogous art because they are from the similar problem solving area of reducing the distortion of a signal. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the predistortion system disclosed by Jenkins and Chandran the adaptive predistortion technique disclosed by Leyendecker. The suggestion/motivation for doing so would have been to reduce distortion of the system tracking any changes in the transfer characteristic of the power amplifier with time (Leyendecker column 1 lines 54-58). Therefore, it would have been obvious to incorporate Jenkins and Chandran with Leyendecker to obtain the invention as specified in claims 78 and 87.

As per claims 79 and 88, Jenkins, Chandran and Leyendecker disclose claims 78 and 87. Leyendecker also discloses generating a feedback signal based on the output signal of the signal handling equipment (figure 6 block 613; column 10 lines 16-39); generating an update value for the corresponding LUT based on the corresponding raw component and the corresponding feedback component (figure 6 block 605; column 10 lines 16-39); and updating each LUT based on the corresponding update value (figure 6

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block 607; column 10 lines 16-39). Chandran discloses dividing the signal into a plurality of components, each component corresponding to a different frequency or band of frequencies (figure 1 block 104; column 1 lines 29-64). Jenkins, Chandran and Leyendecker are analogous art because they are from the similar problem solving area of reducing the distortion of a signal. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the predistortion system disclosed by Jenkins and Chandran the adaptive predistortion technique disclosed by Leyendecker. The suggestion/motivation for doing so would have been to reduce distortion of the system tracking any changes in the transfer characteristic of the power amplifier with time (Leyendecker column 1 lines 54-58). Therefore, it would have been obvious to incorporate Jenkins and Chandran with Leyendecker to obtain the invention as specified in claims 79 and 88.

***Allowable Subject Matter***

Claims 80, 81, 89 and 90 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: claims 80, 81, 89 and 90 are allowed because the references cited fail to teach, as applicant has, generating an update value for the corresponding LUT based on the corresponding raw component and the corresponding feedback component applying the corresponding raw component and the corresponding feedback component to a divider to generate the corresponding update value, as the applicant has claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juan Alberto Torres  
01-05-2006

  
**KEVIN BURD**  
**PRIMARY EXAMINER**